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10/697,537	10/29/2003	David M. Skinlo	Q178-US1	7571

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MARY ELIZABETH BUSH
QUALLION LLC
P.O. BOX 923127
SYLMAR, CA 91392-3127

EXAMINER	
ECHELMEYER, ALIX ELIZABETH	
ART UNIT	**PAPER NUMBER**
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/697,537	SKINLO ET AL.	
	Examiner	Art Unit	
	Alix Elizabeth Echelmeyer	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27,34-38 and 54-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27,34-38 and 54-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed October 3, 2007. Claims 3, 6, 8, 16-18 and 26 have been amended. Claims 54-59 have been added. Claims 1-27, 34-38 and 54-59 are pending and are rejected finally for the reasons given below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 14 and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by Hercamp et al. (US Patent 6,001,503).

Hercamp et al. teach a microporous battery separator that is sealed along two edges by a method such as heat sealing, ultrasonic welding, or pressure welding (abstract, column 2 lines 45-51). The bottom seal is a fold in the separator. An electrode plate is placed within the pocket created by the separator (column 1 lines 54-60). As seen in Figure 1, the electrode contained within the separator pocket includes a tab, (16).

As for claim 59, the seal is found on all four sides of the pocket (see Figure 4).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al.

The teachings of Hercamp et al. as discussed above are incorporated herein.

Hercamp et al. teaches the separator pocket for enclosing an electrode to reduce the possibility of interplate shorting (column 1 lines 30-34) but fail to teach seams on four sides of the pocket.

It would be desirable to make seams on four sides of the separator to reduce the possibility of shorting if the battery was to be used in an application where it might be turned upside down, which might cause the electrodes to slip out of the pocket along the side where there is no seam.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make a seam on the fourth side of the pocket to ensure against the possibility of shorting of the battery.

6. Claims 1, 2, 5-13, 16, 17, 20-22 and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Robert et al. (US Patent 4,476,203).

The teachings of Hercamp et al. as discussed above are incorporated herein.

Regarding claims 1 and 34, Hercamp et al. teach a gap between the seams, allowing for the electrode to be placed in the pocket (Figure 2). As for these claims, as well as 16, Hercamp et al. fail to teach a spacer.

Robert et al. teach a battery cell where the positive electrode is contained within separator elements. The separator materials are larger in surface area than the electrode plates (abstract). Robert et al. teach a line or cord of epoxy resin sealing the separator elements around the outside of the electrode plate to prevent active material from escaping (column 2 lines 3-13).

As seen in Figures 3a and 3b of Robert et al., the epoxy resin serves as sealant as well as spacer, since it is poured into the channel between the portions of the separators that extend beyond the electrode plate (abstract).

It would be advantageous to create the seal of Robert et al. in the separator of Hercamp et al. since the resin can be formed within the space already created by the electrode plate being placed between the two separator sheets, the need for extra machinery to create the seal is removed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the epoxy seal of Robert et al. in the battery of Hercamp et al. in order to facilitate the formation of the seal.

As for claims 2, 17 and 35, Robert et al. is silent on the size of the epoxy resin ribbon. However, Hercamp et al. teach that the separator about 0.006 to 0.015 inches thick. If the spacer of Robert et al. was used in the separator pocket of Hercamp et al., and the epoxy spacer was of the same thickness as the electrode, as seen in Robert et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the spacer of a thickness greater than 10 μm.

Regarding claims 10 and 21, Hercamp et al. teach the seam except for the length extending along the side of the pocket. It would have been an obvious matter of design choice to change the length of the seam, for example to facilitate production, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV).

Claims 12 and 13 are to the thickness of the spacer in relation to the thickness of the electrode. As seen in Figures 3a and 3b of Robert et al., the spacer has the same thickness as the electrode.

With regard to claims 5, 6, 7, Hercamp et al. teach that the pocket of the separator is formed by folding the separator in half and bonding the sides perpendicular to the fold (see above).

As for claim 8, the spacer of Robert et al. forms a seam along the edges of the separator.

Claims 9 and 20 are to the separator made from polypropylene or polyethylene. Hercamp et al. teach that the separator as made of polyethylene (column 1 lines 12-17).

With regard to claims 11, 22 and 38, Hercamp et al. teach a tab on the electrode, with the tab extending outside the separator pocket. It would have been an obvious matter of design choice to put a hole in the tab, perhaps for alignment purposes, since such a modification would have involved a mere change in the shape of the component. A change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV B).

As for claims 36 and 37, Hercamp et al. teach forming the seams after the electrode is positioned within the separator (column 2 lines 45-51, Figure 2).

7. Claims 3, 18 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Robert et al. as applied to claims 1 and 16 above, and further in view of Rossoll (US 5,314,507).

The teachings of Hercamp et al. and Robert et al. as discussed above are incorporated herein.

Hercamp et al. in view of Robert et al. teach a spacer in the seam of the separator bag, but fail to teach the spacer including a substrate having adhesive to connect the substrate to the separator. Robert et al. teach that the epoxy serves as an adhesive to bond the separators (abstract).

Rossoll teaches an adhesively sealed battery (abstract). Although the battery of Rossoll is not a polymer battery such as the battery of Hercamp et al., it is analogous art because both are concerned with the sealing of a battery.

Rossoll teaches a spacer, or frame, connected to the outer components, analogous to the bag of Hercamp et al. in view of Robert et al. (abstract, Figure 2).

The spacer of Rossoll functions as a frame, providing structure to the battery, and as housing (column 2 lines 25-27). Further, it is attached by a high temperature adhesive coating (column 8 lines 10-12).

It would be desirable to use a spacer such as in Rossoll in the battery of Hercamp et al. in view of Robert et al., since such a spacer would serve to provide structure to the battery, and because, if the adhesive did melt, the spacer would still provide some housing for the battery, unlike if the spacer of Robert et al. were to melt.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a spacer such as in Rossoll in the battery of Hercamp et al. in view of Robert et al., since such a spacer would serve to provide structure to the battery, and because, if the adhesive did melt, the spacer would still provide some housing for the battery, unlike if the spacer of Robert et al. were to melt.

8. Claims 4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Robert et al. and Rossoll as applied to claims 3 and 18 above, and in further view of Crabtree (US Patent 4,539,271).

The teachings of Hercamp et al., Robert et al. and Rossoll as discussed above are incorporated herein.

Hercamp et al. in view of Robert et al. and Rossoll teach an epoxy adhesive to seal the edges of a pocket separator but fail to teach the use of an acrylic adhesive.

Crabtree teaches the use of an adhesive such as epoxy or acrylic to seal the edges of a pocket separator. The adhesive is selected to ensure that the seams will not fall apart during assembly or in the cell environment (abstract, column 4 lines 18-33).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the seam of Hercamp et al. in view of Robert et al. and Rossoll out of acrylic if acrylic was determined to be more likely to ensure that the seams would not fall apart during assembly or in the cell environment.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Cheu (US Patent 5,674,641).

The teachings of Hercamp et al. as discussed above are incorporated herein.

Hercamp et al. teaches the separator pocket for enclosing an electrode to reduce the possibility of interplate shorting (column 1 lines 30-34) but fail to teach a tab opening extending through the tab and being open to an edge of the tab.

Cheu teaches a battery module containing a series of batteries having electrode tabs (abstract; Figure 3). The tabs contain holes that can be used for alignment, or to attach shafts or fastening means to form a stack (column 7 lines 35-50; column 8 lines 15-28).

Cheu teaches tab openings but does not teach that the tab openings are open to the edge of the tab. It would have been an obvious matter of design choice to form the tab openings to be open to an edge of the tab, since such a modification would have

facilitated the placement of a shaft or fastening mechanism in the tab openings, such as by allowing the assembler to slide a shaft into the holes from the side instead of from the top down. Such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV B).

It would have been advantageous to make tab openings in the tabs of Hercamp et al. as taught by Cheu in order to facilitate assembly by providing a tool to align the tabs.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make tab openings in the tabs of Hercamp et al. as taught by Cheu in order to facilitate assembly by providing a tool to align the tabs.

10. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Cheu as applied to claim 23 above, and further in view of Robert et al.

The teachings of Hercamp et al., Cheu and Robert et al. as discussed above are incorporated herein.

Hercamp et al. in view of Cheu teach an electrode in a bag with a tab, having a tap opening, extending from the bag. Hercamp et al. in view of Cheu fail to teach a spacer.

Robert et al. teach a battery cell where the positive electrode is contained within separator elements. The separator materials are larger in surface area than the electrode plates (abstract). Robert et al. teach a line or cord of epoxy resin sealing the separator elements around the outside of the electrode plate to prevent active material from escaping (column 2 lines 3-13).

As seen in Figures 3a and 3b of Robert et al., the epoxy resin serves as sealant as well as spacer, sine it is poured into the channel between the portions of the separators that extend beyond the electrode plate (abstract).

As for claim 25, Robert et al. is silent on the size of the epoxy resin ribbon. However, Hercamp et al. teach that the separator about 0.006 to 0.015 inches thick. If the spacer of Robert et al. was used in the separator pocket of Hercamp et al., and the epoxy spacer was of the same thickness as the electrode, as seen in Robert et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the spacer of a thickness greater than 10 μm.

Regarding claim 27, Hercamp et al. teach the seam except for the length extending along the side of the pocket. It would have been an obvious matter of design choice to change the length of the seam, for example to facilitate production, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV).

Regarding claim 26, Robert et al. teach that the epoxy serves as an adhesive to bond the separators (abstract).

It would be advantageous to create the seal of Robert et al. in the separator of Hercamp et al. since the resin can be formed within the space already created by the electrode plate being placed between the two separator sheets, the need for extra machinery to create the seal is removed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the epoxy seal of Robert et al. in the battery of Hercamp et al. in view of Cheu in order to facilitate the formation of the seal.

11. Claims 55-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Robert et al. and Rossoll as applied to claim 54 above, and further in view of Cheu.

The teachings of Hercamp et al., Robert et al., Rossoll and Cheu as discussed above are incorporated herein.

Hercamp et al. in view of Robert et al. and Rossoll teach the claimed invention, including the seams, spacer and fold, as discussed above, except for the tab opening.

Cheu teaches a battery module containing a series of batteries having electrode tabs (abstract; Figure 3). The tabs contain holes that can be used for alignment, or to attach shafts or fastening means to form a stack (column 7 lines 35-50; column 8 lines 15-28).

Cheu teaches tab openings but does not teach that the tab openings are open to the edge of the tab. It would have been an obvious matter of design choice to form the tab openings to be open to an edge of the tab, since such a modification would have

facilitated the placement of a shaft or fastening mechanism in the tab openings, such as by allowing the assembler to slide a shaft into the holes from the side instead of from the top down. Such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV B).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to put holes in the tabs of Hercamp et al. in view of Robert et al. and Rossoll as taught by Cheu since it would aid in alignment or fastening of the stack.

Response to Arguments

12. Applicant's arguments filed October 3, 2007 have been fully considered but they are not persuasive.

Regarding Applicant's argument on page 9, Applicant asserts that the reason for combining Hercamp et al. and Robert et al. is not valid because the seal of Robert et al. would prevent escape of active material, which Hercamp et al. already does. The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Additionally, the motivation to combine the references was provided in the Non-Final Office Action of June 4, 2007 on page 4: "It would be advantageous to create the seal of Robert et al. in the separator of Hercamp et al. since the resin can be formed within the space already created by the electrode plate being

placed between the two separator sheets, the need for extra machinery to create the seal is removed." The fact that there may be a disadvantage does not mean that one of ordinary skill in the art would know to recognize and weigh advantages and disadvantages and come up with a combination such as that of Hercamp et al. and Robert et al. It is not the belief of the examiner that the method for making the combination is needed for the rejection.

As for the arguments concerning claim 14, Applicant states that the definition for "surrounds" should be made in a manner that is consistent with the specification, based on the requirements of MPEP 2111, showing that in one example of a figure, the seam "surrounds" the electrode on all four side.

According to MPEP 2111.01 (I), the plain meaning of the language of the claims should be used unless that interpretation is inconsistent with the specification. MPEP 2111.01 (VI) states that Applicant may be their own lexicographer, but must do so "with reasonable clarity, deliberateness, and precision" and, if done, must "set out his uncommon definition in some manner within the patent disclosure' so as to give one of ordinary skill in the art notice of the change" in meaning. The examiner has not found in the specification a clear definition of the word "surround" to mean other than what one of ordinary skill in the art would interpret it to mean, especially in the context of a pocket. Take, for example, a shirt pocket. An item (analogous to the electrode), placed in a shirt pocket, would be surrounded by seams.

In the arguments concerning claim 23, Applicant states that "there is no motivation in either Cheu or Hercamp for modifying the tab of Cheu." The motivation

does not need to come from the reference itself as long as there is motivation to modify a reference. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found *either in the references themselves or in the knowledge generally available to one of ordinary skill in the art*. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1795

aee

Susy Tsang Foster

SUSY TSANG-FOSTER
SUPERVISORY PATENT EXAMINER